autumnal months, as shown by the following table of percentages, based on observations at Kempshot Observatory.

Average drift from—	Relative number of cases.	
	Cirrus.	Cirro-stratus.
North	7	9
Northeast	26	25
East	28	27
Southeast	8	18
South	4	6
Southwest	7	6
West	13	5
Northwest	7	4
	100	100

This table shows that the highest wind from the west and northwest occurred less frequently than that from the northeast and east, or, in other words, that in about 27 per cent of cases the east and northeast currents reached from the lower clouds up to the highest cirrus and doubtless beyond, but probably the westerly wind prevailed above that, even during the autumnal months. Maxwell Hall adds:

The existence of this still higher current from the west has been confirmed at times by the drift of long continuing trails of shooting stars and by the drift of dust from volcanoes in eruption.

With regard to the strato-cirrus, Mr. Hall says:

When rain begins to fall from a large cumulus, a quantity of cloud is poured into the air from the top of the cumulus, as smoke from a factory chimney. This takes place in all parts of the world when rain falls from cumuli, but in the temperate zones only a little cirriform cloud is thrown off. In Jamaica the process is on a gigantic scale, and the cloud is spread out as a sheet far and wide, so as to shade the land for some hours from the direct rays of the afternoon sun. It is therefore a common cloud in the west-central district of Jamaica during the summer and autumn months. Its texture at first is thick and woolly, but as it spreads the sheet becomes thinner. It then settles down, often passing through different forms, and finally disappears, leaving the evening sky perfectly clear.

Now, by means of a sextant, some careful observations were made of the altitude of the tops of well-formed cumuli whose distances could be ascertained by their rain falling on mountain ranges or by the average interval between the thunder and lightning; and it was found that the average height of such well-formed cumuli was as much as 6 miles. At this elevation the temperature is below zero, and strato-cirrus, when spread out as described above, must be very fine snow, as distinguished from the very minute particles of ice which form cirrus and cirro-stratus. This fine snow then falls slowly by its own weight, and, melting, it often produces those quiet after-rains that follow the heavy rains and squalls of the cumulus.

From what has been said about the spreading out of this cloud, it might be supposed that it had no average drift; but if well-formed cumuli at considerable distances be watched it will be found that, while their average drift is from the southeast over the western half of Jamaica, the drift of the strato-cirrus issuing from them is generally northeast.

(From northeast?—ED.).

With regard to the origin of hurricanes, Mr. Hall says:

If we look at the pilot charts published each month by the U. S. Hydrographic Office, we shall see that when the region of equatorial heavy rains between South America and Africa reaches as far north as latitude 15° cyclones originate in about that latitude, but to the west of the region of heavy rains, and then move off on a westerly course. As the diverting effect of the earth's rotation upon currents of air is very important for the development and maintenance of cyclones, and as this effect varies as the sine of the latitude, there are no cyclones near the equator or within 12° of it; but, as we have seen, at 15° the effect is sufficient to give the currents the necessary divergence. Now, as the region of heavy rains advance as far north as latitude 15° in August, somewhat farther in September and October, but withdraws far to the south in November, and remains there until the following July, it is evident that August, September, and October are the months in which cyclones usually occur in the West Indies. Of course they may occur at other places and at other times if all the essentials are present and combine.

THE CURIOUS WORK OF THE WIND.

In the earlier years of the Weather Bureau it was not uncommon for an observer to send to the Central Office, for exhibition in its museum, some tree trunk studded with straws driven into it by a tornado wind, or twisted into shreds by the action of the wind, or split open by lightning. Lately we have received from Professor McAdie a most instructive illustration of wind work, namely, a Weather Bureau storm-warning flag that had been exposed at the Weather Bureau office, Southeast Farallon Island, Cal., during a recent high wind. Not only is this flag torn into shreds, but the shreds were so interlaced and knotted together as to preserve in permanent form many of the intricate movements of the wind as it whirled past the flagstaff. These movements are easily seen when one watches the fall of snowflakes. The actual path pursued by a particle of atmosphere is undoubtedly not only very complex, but much longer than the path registered by any form of anemometer. Therefore, the so-called internal energy of the wind is decidedly greater than would correspond to the measured velocity of the wind, just as the internal energy of a vortex ring is much greater than that of its linear movement as a whole, or just as the internal energy of a warm gas, as computed from its temperature, is much greater than the energy of the whole mass as computed from the linear movement of the mass as a whole.

INSTRUCTION IN METEOROLOGY.

Through the generosity of an unknown citizen, the city of Chattanooga has been enabled to provide its high school with a meteorological observatory, equipped with the following standard instruments: An anemometer with single register, a barometer and barometer box, hygrometer, maximum and minimum thermometers, rain and snow gage with support, and standard thermometer shelter. The instruments were presented to the school on condition that meteorology should be added to its curriculum as an optional study, and 20 copies of a text book on meteorology were given by the same person for the free use of students. The instruments were selected by Mr. L. M. Pindell, Observer at Chattanooga, and installed under his direction. Twenty-three students formed the first year's class. Mr. Pindell has assisted the teacher by occasional talks to the class and explanations of the care and use of the instruments. So far as the Editor knows, this is the first *high school* in the country to possess a meteorological laboratory, a laboratory scarcely inferior in educational value to the high school laboratories of chemistry and physics now universally recognized as indispensable in connection with thorough elementary instruction in those subjects.

HUMMING OF TELEGRAPH WIRES AND POLES.

The question is frequently asked: "What causes the humming of the telegraph wires and poles; what connection has it with the weather; can it be used for weather forecasting?" The telegraph pole merely transmits to the ear the humming of the wires over head. Its own vibrations are so slow that they make no audible sound. The wires strung from pole to pole are set into oscillation by the wind, somewhat as the strings of a violin are set into vibration by the bow. In skilful hands the violin bow can be made to bring forth from the string one powerful fundamental note and several overtones of higher pitch but in perfect harmony with the fundamental. But the wind is a very unskilful performer, and brings forth at the same time not only the deepest fundamental bass note of the wire, but a great variety of overtones, both harmonious and discordant. In fact, the many wires strung over head, from pole to pole, constitute splendid æolian harps. The slowest oscillations of the wires may be seen or felt, but are not audible. The bass notes and the higher tenor we hear but faintly when we stand midway between two poles. If the ear is pressed against a pole we hear more especially those notes to which the wooden pole can most easily respond; sometimes a special note, started by the wire at the upper end of the pole, is reinforced by resonance, and that which is only feeble on the wire becomes most prominent on the pole. Of course, the stronger the wind and the more gusty it is, so much the more active will be the humming of the wire and the pole. If the wind blows lengthwise of the wire it will bring out a different combination of notes from those produced by a transverse wind. Therefore, the direction of the wind has some influence upon the humming of the telegraph poles, but the direction of the wind depends upon the location of the storm center, and is a good basis for local prediction as to rain. Hence, those who have studied the humming very closely have frequently declared that they can tell the weather by the character of the humming.

According to a clipping from the Saturday Budget, Quebec, Ont., March 12, 1904, a prominent meteorologist in Toronto has made a series of observations and arrives at the following conclusions:

* * * the humming of wires running east and west invariably presaged a fall of temperature, often ten or more hours in advance of the thermometer; the humming of wires running north and south advised a rise in temperature, almost always several hours in advance of the thermometer. Wires running east and west never hummed together with wires running north and south, not even when the same wires running along an east and west street turned down a north and south side; only that portion of them hummed that indicated a rise or fall in temperature, as explained above. If one part hummed the other part was silent.

It seems evident to us that the humming is due entirely to the action of the wind. We see no necessity for assuming that electric currents, either in the air or in the wire, or any other mystery need to be considered. Those who invoke electricity must give some plausible reason why the current should oscillate with such frequency as to cause the rapid vibrations that must exist in order to cause audible sound.

NOTE ON THE GREAT METEOR OF SEPTEMBER 15, 1902.

Since printing the article by Mr. Mosely on page 172 of the April REVIEW, he has received the following record from Thomas Mikesell, voluntary observer at Wauseon, Ohio, 33 miles west of Toledo (in latitude 41° 35′ north, longitude 84° 7′ west), who says:

Several persons about Wauseon saw the meteor, though I did not see it myself. My record states that at 5:45 a. m., central standard time, I looked out of the window and saw a curious streak, like a thin, white cloud, extending from near the east, northward about 40°. It was about three-fourths of a degree wide, of serpentine form, with a few short kinks. It continued visible for fifteen or twenty minutes and hardly moved from where I first saw it, though it changed to an ashy color. I noted the time at once on seeing it. I estimated the altitude at about 25°, perhaps a little lower at the north end.

Mr. Mosely adds:

This would seem to show that the trail remained visible at Wauseon for nearly an hour and a half after the passage of the meteor. The estimate of altitude is in substantial accord with the conclusions I had already reached.

WEATHER BUREAU MEN AS INSTRUCTORS.

Mr. Edward L. Wells, Observer, Boise, Idaho, reports that on June 10 some 30 teachers of the Ada County Teachers' Institute visited the local office of the Weather Bureau, and listened to an informal talk on the use of the instruments and the work of the Bureau. The teachers evinced more than a passing interest in these matters, and some of them desired to study the instruments more in detail in order that they might be better able to instruct their pupils.

On May 14 he addressed the class in physical geography from the Boise High School on observations and map making and the collection of meteorological data.

On June 9, Mr. Wm. G. Burns, Section Director, Springfield, Ill., addressed an advanced class from the Convers Public School on the general scope of Weather Bureau work.

Mr. J. R. Weeks, Observer, Macon, Ga., on June 3 delivered an illustrated lecture before 200 students of the Georgia-Alabama Business College on the Subject, "Weather and Business."

Mr. James H. Scarr, Observer, Sacramento, Cal., and Mr. E. Bonnett, Assistant Observer, on May 13 lectured to the class in physics from the city high school, which came to the office in two sections. The instruction consisted of an explanation of the instruments and weather maps, with some remarks on the scope and limitations of weather forecasting. Members of the class have since frequently visited the office for fuller instruction on special points.

THE WEATHER OF THE MONTH.

By Mr. W. B. STOCKMAN, District Forecaster, in charge of Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

The mean pressure for May, 1904, was highest, with readings of about 30.10 inches, on the north Pacific coast, with a secondary area of somewhat lower pressure over the middle Atlantic and New England coasts. It was lowest over the southern Plateau region, with minimum readings of 29.75 inches in southern Arizona.

The mean pressure was above the normal in New England, the eastern portion of the Middle Atlantic States, eastern Texas, Missouri Valley, middle and northern slope, northern Plateau, and north Pacific regions, and slightly below normal in the remaining districts. The greatest plus departures were .10 inch in the northwestern portion of the north Pacific region, and the maximum minus departures occurred on the southern coast of and in the interior of California and ranged from —.05 to —.09 inch.

The mean pressure for the month increased over that of April, 1904, in the north Pacific region, New England, and the eastern portion of the Middle Atlantic States, and diminished in the remaining districts.

The increase in New England and the eastern portion of the Middle Atlantic States was slight, while in the north Pacific region it ranged from +.05 to +.11 inch. Over the greater portion of the area where there was a decrease the changes were quite marked, ranging from —.15 to —.20 inch, in the north-central section of the United States.

TEMPERATURE OF THE AIR.

The distribution of maximum, minimum, and average surface temperatures is graphically shown by the lines on Chart V.

The mean temperature of the month was below normal in the Southern States, except the eastern portions of Virginia, North Carolina and Kentucky, and central Florida, in Kansas, eastern and northern Colorado, Utah, Wyoming, eastern Montana, western North Dakota, northeastern Oregon, Washington, and on the south-central coast of California; and above normal in the remaining districts.

In northern and central California, south-central Arizona, the eastern parts of the Dakotas, northern lower Michigan, southeastern Wisconsin, New England, New York, eastern Pennsylvania, and northern and central New Jersey the changes were from +2.0° to somewhat more than +4.0°. The minus departures were not so large.